

DF3A6.8FUT1

Preferred Device

Zener Transient Voltage Suppressor

Dual Common Anode Zeners for ESD Protection

These dual monolithic silicon zener diodes are designed for applications requiring transient overvoltage protection capability. They are intended for use in voltage and ESD sensitive equipment such as computers, printers, business machines, communication systems, medical equipment and other applications. Their dual junction common anode design protects two separate lines using only one package. These devices are ideal for situations where board space is at a premium.

Features

- Pb-Free Package is Available
- SC-70 Package Allows Two Separate Unidirectional Configurations
- Low Leakage < 1.0 μ A @ 5.0 V
- Breakdown Voltage: 6.4–7.2 V @ 5.0 mA
- ESD Protection Meeting: 16 kV Human Body Model
30 kV Contact = IEC61000-4-2
- Peak Power: 24 W @ 1.0 ms (Unidirectional), per Figure 1
- Peak Power: 150 W @ 20 μ s (Unidirectional), per Figure 2

Mechanical Characteristics

- Void Free, Transfer-Molded, Thermosetting Plastic Case
- Corrosion Resistant Finish, Easily Solderable
- Package Designed for Optimal Automated Board Assembly
- Small Package Size for High Density Applications

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Steady State Power Dissipation Derate above 25°C (Note 1)	P_D	200 1.6	mW mW/°C
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	618	°C/W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to +150	°C
Peak Power Dissipation @ 1.0 ms (Note 2) @ $T_A = 25^\circ\text{C}$	P_{PK}	20	W
Peak Power Dissipation @ 20 μ s (Note 3) @ $T_A = 25^\circ\text{C}$	P_{PK}	150	W
ESD Discharge MIL STD 883C – Method 3015-6 IEC61000-4-2, Air Discharge IEC61000-4-2, Contact Discharge	V_{PP}	16 30 30	kV

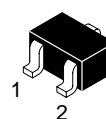
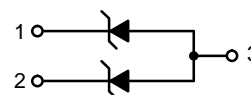
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. Mounted on FR-5 Board = 1.0 X 0.75 X 0.062 in.
2. Non-repetitive pulse per Figure 1.
3. Non-repetitive pulse per Figure 2.



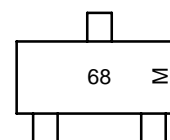
ON Semiconductor®

<http://onsemi.com>



SC-70/SOT-323
CASE 419
STYLE 4

MARKING DIAGRAM



68 = Specific Device Code
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
DF3A6.8FUT1	SC-70	3000/Tape & Reel
DF3A6.8FUT1G	SC-70 (Pb-Free)	3000/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

Preferred devices are recommended choices for future use and best overall value.

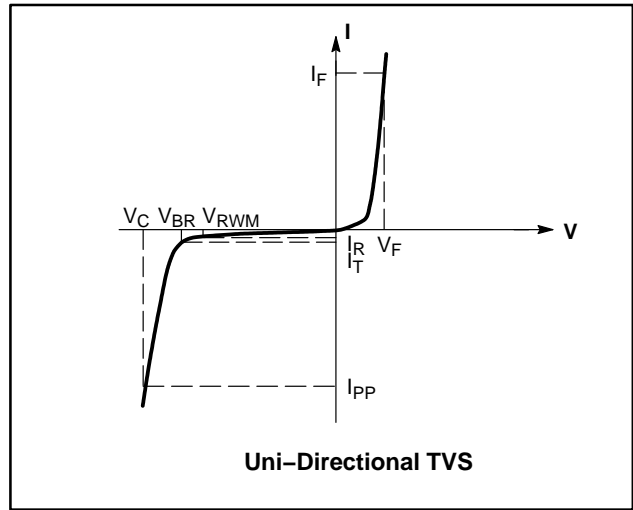
DF3A6.8FUT1

ELECTRICAL CHARACTERISTICS

($T_A = 25^\circ\text{C}$ unless otherwise noted)

UNIDIRECTIONAL (Circuit tied to Pins 1 and 3 or 2 and 3)

Symbol	Parameter
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_F	Forward Current
V_F	Forward Voltage @ I_F
Z_{ZT}	Maximum Zener Impedance @ I_{ZT}
Z_{ZK}	Maximum Zener Impedance @ I_{ZK}



ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

UNIDIRECTIONAL (Circuit tied to Pins 1 and 3 or 2 and 3)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Forward Voltage	V_F	$I_F = 10 \text{ mA}$		0.8	0.9	V
Zener Voltage (Note 4)	V_Z	$I_{ZT} = 5 \text{ mA}$	6.4	6.8	7.2	V
Operating Resistance (Note 5)	Z_{ZK}	$I_{ZK} = 0.5 \text{ mA}$			200	Ω
	Z_{ZT}	$I_{ZT} = 5 \text{ mA}$			50	Ω
Reverse Current	I_{R1}	$V_{RWM} = 5 \text{ V}$			0.5	μA
Clamping Voltage	V_C	$I_{PP} = 2.0 \text{ A}$ (Figure 1)			9.6	V
		$I_{PP} = 9.37 \text{ A}$ (Figure 2)			16	V
ESD Protection	Human Body Model (HBM) Contact – IEC61000-4-2 Air Discharge				16	kV
					30	
					30	

4. V_Z measured at pulse test current I_{ZT} at an ambient temperature of 25°C .

5. Z_{ZT} and Z_{ZK} is measured by dividing the AC voltage drop across the device by the AC current supplied. AC frequency = 1.0 kHz.

DF3A6.8FUT1

TYPICAL CHARACTERISTICS

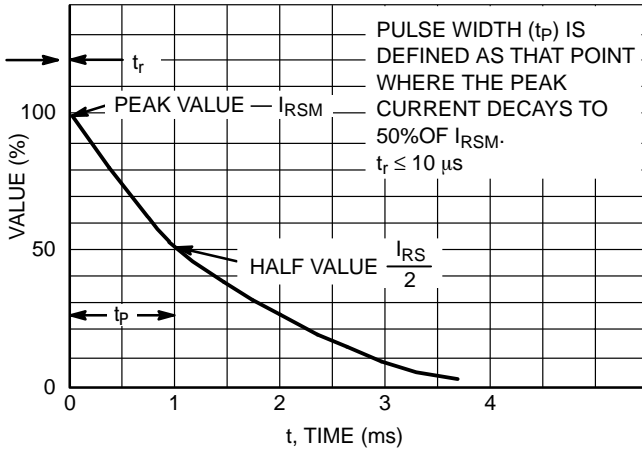


Figure 1. $10 \times 1000 \mu s$ Pulse Waveform

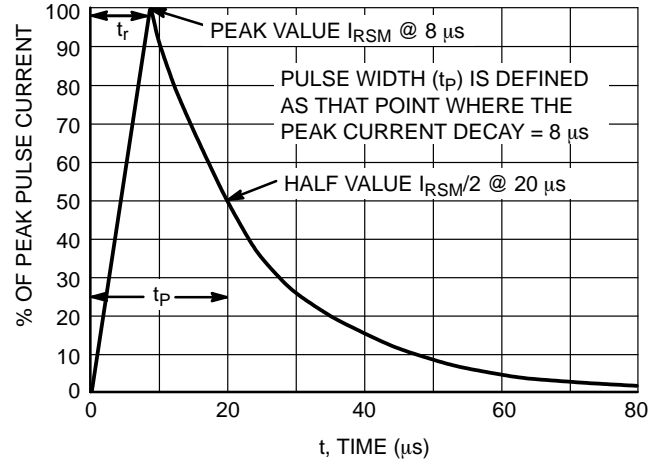


Figure 2. $8 \times 20 \mu s$ Pulse Waveform

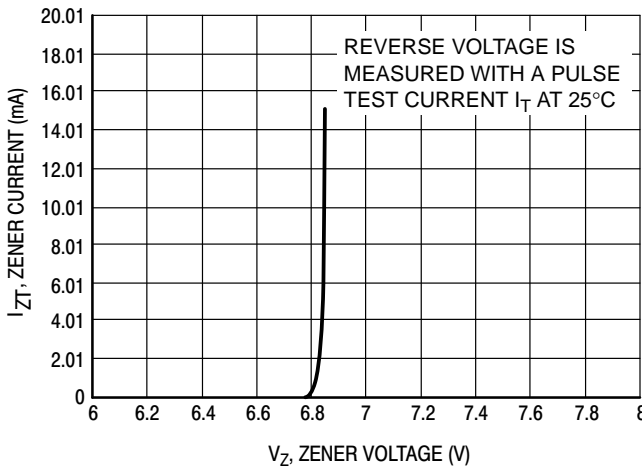


Figure 3. Zener Voltage vs. Zener Current

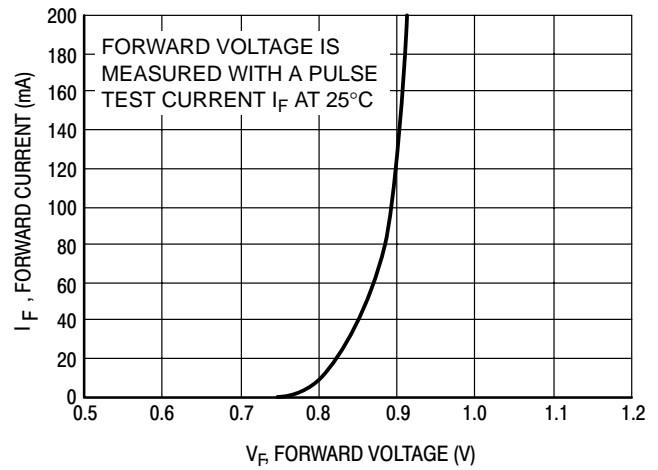


Figure 4. Forward Voltage vs. Forward Current

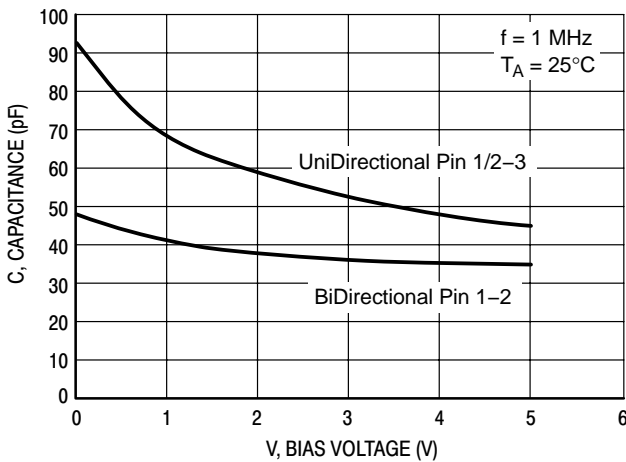


Figure 5. Capacitance vs. Bias Voltage

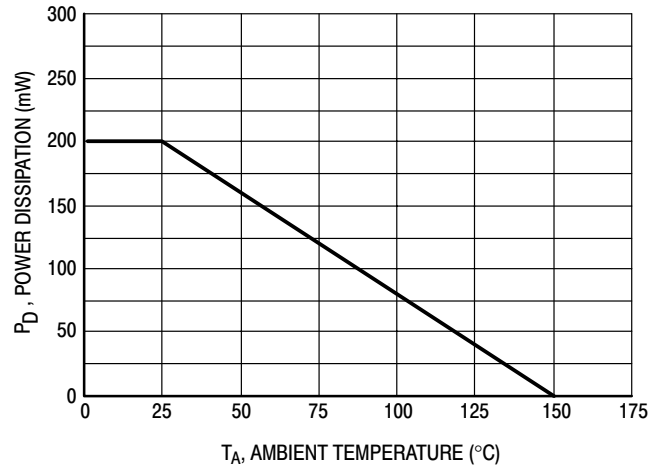
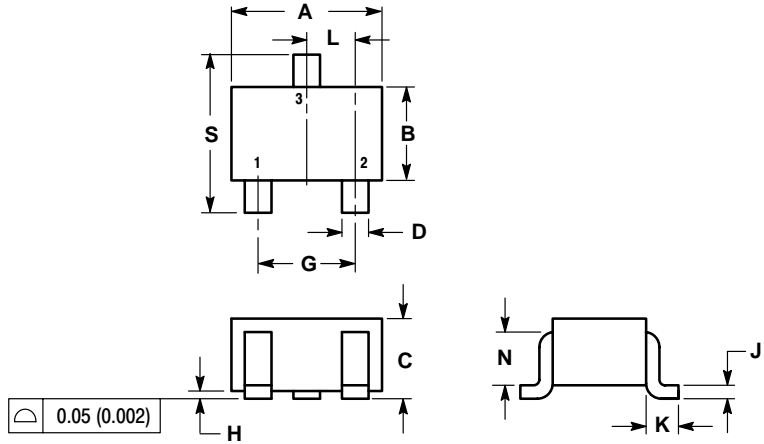


Figure 6. Steady State Power Derating Curve

DF3A6.8FUT1

PACKAGE DIMENSIONS

SC-70 (SOT-323)
CASE 419-04
ISSUE L



NOTES:

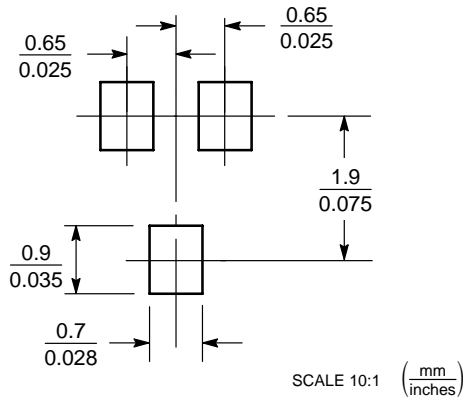
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.032	0.040	0.80	1.00
D	0.012	0.016	0.30	0.40
G	0.047	0.055	1.20	1.40
H	0.000	0.004	0.00	0.10
J	0.004	0.010	0.10	0.25
K	0.017 REF		0.425 REF	
L	0.026 BSC		0.650 BSC	
N	0.028 REF		0.700 REF	
S	0.079	0.095	2.00	2.40

STYLE 4:

- PIN 1. CATHODE
- CATHODE
- ANODE

SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
P.O. Box 61312, Phoenix, Arizona 85082-1312 USA
Phone: 480-829-7710 or 800-344-3860 Toll Free USA/Canada
Fax: 480-829-7709 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center
2-9-1 Kamimeguro, Meguro-ku, Tokyo, Japan 153-0051
Phone: 81-3-5773-3850

ON Semiconductor Website: <http://onsemi.com>

Order Literature: <http://www.onsemi.com/litorder>

For additional information, please contact your local Sales Representative.